



4

SEQUENCE LISTING

<110> Rodriguez, Moses
Miller, David J.
Pease, Larry R.

<120> Human IgM Antibodies and Diagnostic and
Therapeutic Uses Thereof Particularly in the Central Nervous
System

<130> 1199-1-005CIP2

<140> 10/010,729
<141> 2001-11-13

<150> 09/730,473
<151> 2000-12-05

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<151> 2000-05-30

<150> 09/322,862
<151> 1999-05-28

<150> 08/779,784
<151> 1997-01-07

<150> 08/692,084
<151> 1996-08-08

<150> 08/236,520
<151> 1994-04-29

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cagctcagca gcctgacttc tgagaactct gcagtcttatt tcttgtcaag aggggccagg 360
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tgcacagtct ctgggttctc attaacttagc tatgggtgtac actgggttcg ccagtctcca 180
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tacccctcaga tgaatgcctt gagagatgag gacactgcca ttattactg tgcaagagat 360
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gaaccagatg gaactattaa acgcctgatc tacgccacat ccagtttaga ttctgggttg 240
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atcacctgca aggccaggta ggatgtgagt actgctgtag cctggtatca acagaaaacca 180
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<210> 7

<211> 119

<212> PRT

<213> Homo sapiens

<400> 7

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20 25 30
Gly Met His Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Trp Val
35 40 45
Ala Val Ile Ser Tyr Asp Gly Ser Arg Lys Tyr Tyr Ala Asp Ser Val
50 55 60
Lys Gly Arg Phe Thr Ile Ser Arg Asp Asn Ser Lys Asn Thr Leu Tyr
65 70 75 80
Leu Gln Met Asn Ser Leu Thr Ala Asp Asp Thr Ala Val Tyr Tyr Cys
85 90 95
Ala Lys Gly Val Thr Gly Ser Pro Thr Leu Asp Tyr Trp Gly Gln Gly
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Thr Leu Val Thr Val Ser Ser
115

<210> 8

<211> 357

<212> DNA

<213> Homo sapiens

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ccaggcaagg ggctggagtg ggtggcagtt atatcatatg atgaaatgtaa taaataactat 180
gcagactccg tgaagggccg attcaccatc tccagagaca attccaagaa cacgctgtat 240
ctgcaaatga acagcttgcg agctgaggac acggctgtgt attactgtgc gaaagaggtg 300
actgcttattc cctacttgc ctactggggc cagggAACCC tggtcaccgt ctccctca 357

<210> 9

<211> 114

<212> PRT

<213> Homo sapiens

<400> 9

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Lys Val Thr Ile Ser Cys Ser Gly Ser Ser Ser Asn Ile Gly Asn Asn
20 25 30

Phe Val Ser Trp Tyr Gln Gln Leu Pro Gly Thr Ala Pro Arg Leu Leu
35 40 45
Ile Tyr Asp Ile Thr Lys Arg Pro Ser Gly Ile Pro Asp Arg Phe Ser
50 55 60
Gly Ser Lys Ser Gly Thr Ser Ala Thr Leu Gly Ile Thr Gly Leu Gln
65 70 75 80
Thr Gly Asp Glu Ala Asp Tyr Tyr Cys Gly Thr Trp Asp Ser Ser Leu
85 90 95
Ser Ala Val Val Phe Gly Gly Thr Lys Leu Thr Val Leu Gly Gln
100 105 110
Pro Lys

<210> 10
<211> 337
<212> DNA
<213> Homo sapiens

<400> 10
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tcctgctctg gaagcagctc caacattggg aataattatg tatcctggta ccagcagctc 120
ccaggaacag ccccaaact cctcatttat gacaataata agcgaccctc agggattcct 180
gaccgattct ctggctccaa gtctggcacg tcagccaccc tgggcacac cggactccag 240
actggggacg aggccgatta ttactgcgga acatggata gcagcctgtg tggattcgg 300
cggagggacc aagctgaccg tcctaggtca gccaag 337

<210> 11
<211> 121
<212> PRT
<213> Homo sapiens

<400> 11
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Thr Leu Ser Leu Thr Cys Thr Val Ser Gly Gly Ser Ile Ser Ser Tyr
20 25 30
Tyr Trp Ser Trp Ile Arg Gln Pro Pro Gly Lys Gly Leu Glu Trp Ile
35 40 45
Gly Tyr Ile Tyr Tyr Ser Gly Ser Thr Asn Tyr Asn Pro Ser Leu Lys
50 55 60
Ser Arg Val Thr Ile Ser Val Asp Thr Ser Lys Asn Gln Phe Ser Leu
65 70 75 80
Lys Leu Ser Ser Val Thr Ala Ala Asp Thr Ala Val Tyr Tyr Cys Ala
85 90 95
Arg Ser Ala Gln Gln Gln Leu Val Tyr Tyr Phe Asp Tyr Trp Gly Gln
100 105 110
Gly Thr Leu Val Thr Val Ser Ser Gly
115 120

<210> 12
<211> 370
<212> DNA
<213> Homo sapiens

<400> 12

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ccagggaaagg gactggagtg gattgggtat atctattaca gtgggagcac caactacaac 180
ccctccctca agagtcgagt caccatatca gtagacacgt ccaagaacab ccagttctcc 240
ctgaagctga gctctgtgac cgctgcggac acggccabcg tgtattactg tgcgaggteg 300
gcacagcagc agctggtata ctacdtttga ctactggggc cagggAACCC tggtcaccgt 360
ctcctcagg 370

<210> 13
<211> 119
<212> PRT
<213> Homo sapiens

<400> 13
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Glu Arg Ala Thr Ile Asn Cys Lys Ser Ser Gln Ser Val Leu Tyr Ser
20 25 30
Ser Asn Asn Lys Asn Tyr Leu Ala Trp Tyr Gln Gln Lys Pro Gly Gln
35 40 45
Pro Pro Lys Leu Leu Ile Tyr Trp Ala Ser Thr Arg Glu Ser Gly Val
50 55 60
Pro Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr
65 70 75 80
Ile Ser Ser Leu Gln Ala Glu Asp Val Ala Val Tyr Tyr Cys Gln Gln
85 90 95
Tyr Tyr Ser Thr Pro Leu Thr Phe Gly Pro Gly Thr Lys Val Asp Ile
100 105 110
Lys Arg Thr Val Ala Ala Pro
115

<210> 14
<211> 357
<212> DNA
<213> Homo sapiens

<400> 14
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tggtaccaggc agaaaccagg acagccctctt aagctgtca ttactgggc atctaccgg 180
gaatccgggg tccctgaccg attcagtggc agcgggtctg ggacagattt cactctcacc 240
atcagcagcc tgcaggctga agatgtggca gtttattact gtcagcaata ttatagtact 300
cctctcactt tcggccctgg gaccaaagtg gatataaac gaactgtggc tgcacca 357

<210> 15
<211> 112
<212> PRT
<213> Homo sapiens

<400> 15
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Gly Phe Ile Phe Ser Ser Tyr Gly Met His Trp Val Arg Gln Val Pro
20 25 30
Gly Lys Gly Leu Glu Trp Val Ala Val Ile Trp Tyr Asp Gly Ser Asp
35 40 45

Lys Tyr Tyr Val Asp Ser Val Lys Gly Arg Phe Thr Ile Ser Arg Asp
50 55 60
Asn Ser Lys Asn Thr Leu Tyr Leu Gln Met Asn Ser Leu Arg Ala Glu
65 70 75 80
Asp Thr Ala Val Tyr Tyr Cys Ala Arg Asp Arg Ser Ser Gly Trp Tyr
85 90 95
Trp Ser Cys Asp Ser Trp Gly Gln Gly Thr Leu Val Ile Val Ser Ser
100 105 110

<210> 16
<211> 338
<212> DNA
<213> Homo sapiens

<400> 16
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cagttatatg gtatgtatggaa agtataat actatgtaga ctccgtgaag ggccgattca 180
ccatctccag agacaattct aaaaacacgc tctatctgca aalyaacagc ctgagagccg 240
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actcctgggg ccagggacc ctggcattt tctcctca 338

<210> 17
<211> 117
<212> PRT
<213> Homo sapiens

<400> 17
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Thr Ser Ser Asp Val Gly Gly Tyr Asn Tyr Val Ser Trp Tyr Gln Gln
20 25 30
His Pro Gly Lys Ala Pro Lys Leu Met Ile Tyr Asp Val Ser Asp Arg
35 40 45
Pro Ser Gly Val Ser Asn Arg Phe Ser Gly Ser Lys Ser Gly Asn Thr
50 55 60
Ala Ser Leu Thr Ile Ser Gly Leu Gln Ala Glu Asp Glu Ala Asp Tyr
65 70 75 80
Tyr Cys Ser Ser Tyr Thr Ser Ser Ser Val Val Phe Gly Gly Gly
85 90 95
Thr Lys Leu Thr Val Leu Gly Gln Pro Lys Ala Ala Pro Ser Val Thr
100 105 110
Leu Phe Pro Pro Pro
115

<210> 18
<211> 358
<212> DNA
<213> Homo sapiens

<400> 18
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actcatgatt tatgtatgtca gtgatcgcc ctcagggtt tctaattcgct tctctggctc 180
caagtctggc aacacggctt ccctgaccat ctctggctc caggctgagg acgaggctga 240

ttattactgc agctcatata caagcagcag ctctgtggta ttccggcgag ggaccaagct 300
gaccgtccta ggtcagccca aggctcccc ctcggtcact ctgttcccgc ctccaagg 358

<210> 19
<211> 120
<212> PRT
<213> Mus musculus

<400> 19
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Phe Val Lys Ile Ser Cys Lys Ala Ser Gly Tyr Thr Phe Thr Asn Tyr
20 25 30
Asp Leu Asn Trp Val Arg Gln Arg Pro Gly Gln Gly Leu Glu Trp Ile
35 40 45
Gly Trp Ile Tyr Pro Gly Asn Asp Asn Thr Lys Tyr Asn Glu Lys Phe
50 55 60
Lys Gly Leu Ala Ser Leu Thr Ala Asp Lys Ser Ser Thr Thr Ala Tyr
65 70 75 80
Leu His Leu Ser Ser Leu Thr Ser Glu Ser Ser Ala Val Tyr Phe Cys
85 90 95
Ala Arg Gly Leu Pro Arg Gly Trp Tyr Phe Asp Val Trp Gly Ala Gly
100 105 110
Thr Thr Val Thr Val Ser Ser Ala
115 120

<210> 20
<211> 360
<212> DNA
<213> Mus musculus

<400> 20
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cctggacagg gccttgagtg gattggatgg atttatccctg gaaatgataa tactaagtac 180
aatgagaagt tcaaggccct ggcctactg actgcagaca agtcctccac cacagccctac 240
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<210> 21
<211> 101
<212> PRT
<213> Mus musculus

<400> 21
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20 25 30
Val Ser Trp Tyr Gln Gln Lys Pro Glu Gln Ser Pro Lys Leu Leu Ile
35 40 45
Tyr Gly Ala Ser Asn Arg Tyr Thr Gly Val Pro Asp Arg Phe Thr Gly
50 55 60
Ser Gly Ser Ala Thr Asp Phe Thr Leu Thr Ile Ser Ser Val Gln Ala
65 70 75 80

Glu Asp Leu Ala Asp Tyr His Cys Gly Gln Gly Tyr Ser Tyr Pro Tyr
85 90 95
Thr Phe Gly Gly Gly
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<210> 22
<211> 303
<212> DNA
<213> Mus musculus

<400> 22
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cgcttcacag gcagtggtac tgcaacagat ttcaactctga ccatcagcag tgtgcaggct 240
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ggg . 303

<210> 23
<211> 101
<212> PRT
<213> Mus musculus

<400> 23
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Glu Thr Ile Thr Ile Asn Cys Arg Ala Ser Lys Ser Ile Ser Lys Tyr
20 25 30
Leu Ala Trp Tyr Gln Glu Arg Pro Gly Lys Thr Asn Lys Leu Ile
35 40 45
Tyr Ser Gly Ser Thr Leu Gln Ser Gly Ile Pro Ser Arg Phe Ser Gly
50 55 60
Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Ser Leu Glu Pro
65 70 75 80
Glu Asp Phe Ala Met Tyr Tyr Cys Gln Gln His Asn Glu Tyr Pro Tyr
85 90 95
Thr Phe Gly Gly Gly
100

<210> 24
<211> 303
<212> DNA
<213> Mus musculus

<400> 24
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ggaaaaaacta ataagcttct tatctactct ggatccactt tgcaatctgg aattccatca 180
aggttcagtg gcagtggtac ttgtacagat ttcaactctca ccatcagtag cctggagcct 240
gaagattttg caatgttata ctgtcaacag cataatgaat acccgtatac gttcggaggg 300
ggg . 303

<210> 25
<211> 124
<212> PRT

<213> Homo sapiens

<400> 25

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									25					30	
Ala	Met	Ser	Trp	Val	Arg	Gln	Ala	Pro	Gly	Lys	Gly	Leu	Glu	Trp	Val
									40					45	
Ser	Ser	Leu	Ser	Gly	Asp	Ser	Gly	Ser	Ser	Tyr	Tyr	Ala	Asp	Ser	Val
									55					60	
Lys	Gly	Arg	Phe	Thr	Ile	Ser	Arg	Asp	Asn	Ser	Lys	Ser	Thr	Val	Phe
									70					75	80
Leu	Gln	Leu	Ser	Ser	Leu	Arg	Ala	Glu	Asp	Thr	Ala	Ile	Tyr	Tyr	Cys
									85					90	95
Ala	Gln	Glu	Thr	Gly	Pro	Gln	Arg	Arg	Trp	Gly	Gln	Gly	Thr	Leu	Val
									100					105	110
Thr	Val	Ser	Ser	Gly	Ser	Ala	Ser	Ala	Pro	Thr	Leu				
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<210> 26

<211> 372

<212> DNA

<213> Homo sapiens

<400> 26

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ccagggaaagg gactggagtg ggtctcaagt ctttagtggtg atagtggtag ttcataattat 180
gcagactccg tgaaggggccg attcaccatc tccagagaca atttccaagag cacgggtttt 240
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cccccaaccc tt 372

<210> 27

<211> 116

<212> PRT

<213> Homo sapiens

<400> 27

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									25					30	
Leu	Ala	Trp	Tyr	Gln	Gln	Lys	Pro	Gly	Lys	Ala	Pro	Lys	Leu	Leu	Ile
									35					40	45
Tyr	Lys	Ala	Phe	Asn	Leu	Glu	Ser	Gly	Val	Pro	Ser	Arg	Phe	Arg	Gly
									50					55	60
Ser	Gly	Ser	Gly	Thr	Glu	Phe	Thr	Leu	Thr	Ile	Ser	Ser	Leu	Gln	Pro
									65					70	75
Asp	Asp	Ser	Ala	Thr	Tyr	Tyr	Cys	Gln	Gln	Tyr	Ser	Ser	Tyr	Pro	Leu
									85					90	95
Thr	Phe	Gly	Gly	Thr	Lys	Val	Asp	Ile	Lys	Arg	Thr	Val	Ala	Ala	
									100					105	110
Pro	Ser	Val	Phe												
									115						

<210> 28
<211> 348
<212> DNA
<213> Homo sapiens

<400> 28
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gggaaagccc ctaaactcct gatctataag gcgtttaatt tagaaagtgg ggtccccatca 180
aggttcagag gcagtggctc tgggacagaa ttcactctca ccatcagcag cctgcagcct 240
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gggaccaagg tggacattaa acgaaactgtg gctgcaccat ctgtcttc 348

<210> 29
<211> 106
<212> PRT
<213> Homo sapiens

<400> 29
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Phe Thr Gly Tyr Tyr Met His Trp Val Arg Gln Ala Pro Gly Gln Gly
20 25 30
Leu Glu Trp Met Gly Trp Ile Asn Pro Asn Ser Gly Gly Thr Asn Tyr
35 40 45
Ala Gln Lys Phe Gln Gly Arg Val Thr Met Thr Arg Asp Thr Ser Ile
50 55 60
Ser Thr Ala Tyr Met Glu Leu Ser Arg Leu Arg Ser Asp Asp Thr Ala
65 70 75 80
Val Tyr Tyr Cys Ala Arg Asp Arg Ser Tyr Pro Gly Arg Asn Tyr Phe
85 90 95
Asp Tyr Trp Gly Gln Gly Thr Leu Val Thr
100 105

<210> 30
<211> 327
<212> DNA
<213> Homo sapiens

<400> 30
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accggctact atatgcactg ggtgcgacag gcccctggac aagggcttga gtggatggga 120
tggatcaacc ctaaacgtgg tggcacaaaac tatgcacacaga agtttcaggc cagggtcacc 180
atgaccaggg acacgtccat cagcacagcc tacatggagc tgacgaggct gagatctgac 240
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tactggggcc agggAACCTC ggtcacc 327

<210> 31
<211> 101
<212> PRT
<213> Homo sapiens

<400> 31
Glu Ile Val Leu Thr Gln Ser Pro Gly Thr Leu Ser Leu Ser Pro Gly

1 5 10 15
Glu Arg Ala Thr Leu Ser Cys Arg Ala Ser Gln Ser Val Ser Ser Ser
20 25 30
Tyr Leu Ala Trp Tyr Gln Gln Lys Pro Gly Gln Ala Pro Arg Leu Leu
35 40 45
Ile Tyr Gly Ala Ser Ser Arg Ala Thr Gly Ile Pro Asp Arg Phe Ser
50 55 60
Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Arg Leu Glu
65 70 75 80
Pro Glu Asp Phe Ala Val Tyr Tyr Cys Gln Gln Tyr Gly Ser Ser His
85 90 95
Thr Phe Gly Gln Gly
100

<210> 32
<211> 303
<212> DNA
<213> Homo sapiens

<400> 32
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ctctcctgca gggccagtca gagtgttagc agcagctact tagcctggta ccagcagaaa 120
cctggccagg ctcccaggct cctcatctat ggtgcattcca gcagggccac tggcatccca 180
gacaggttca gtggcagtgg gtctgggaca gacttcactc tcaccatcag cagactggag 240
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ggg 303

<210> 33
<211> 109
<212> PRT
<213> Homo sapiens

<400> 33
Gly Leu Val Lys Pro Gly Gly Ser Leu Arg Leu Ser Cys Ala Ala Ser
1 5 10 15
Gly Phe Thr Phe Ser Asp Tyr Tyr Met Ser Trp Ile Arg Gln Ala Pro
20 25 30
Gly Lys Gly Leu Glu Trp Val Ser Tyr Ile Ser Ser Ser Ser Tyr
35 40 45
Thr Asn Tyr Ala Asp Ser Val Lys Gly Arg Phe Thr Ile Ser Arg Asp
50 55 60
Asn Ala Lys Asn Ser Leu Tyr Leu Gln Met Asn Ser Leu Arg Ala Glu
65 70 75 80
Asp Thr Ala Val Tyr Tyr Cys Ala Arg Asp Arg Ser Ser Ser Ser Trp
85 90 95
Tyr Tyr Tyr Tyr Gly Met Asp Val Trp Gly Gln Gly
100 105

<210> 34
<211> 329
<212> DNA
<213> Homo sapiens

<400> 34
gaggcttgtt caaggcctgga gggccctgt gactctcctg tgccaggctct ggattcacct 60

tcagtgacta ctacatgagc tggatccgcc aggctccagg gaaggggctg gagtgggttt 120
catacattag tagtagtagt agttacacaa actacgcaga ctctgtgaag ggccgattca 180
ccatctccag agacaacgcc aagaactcac tgtatctgca aatgaacagc ctgagagccg 240
aggacacgjc tgtgtattac tgtgcgagag atcggtcgag cagcagctgg tactactact 300
actacggtat ggacgtctgg ggccaaggg 329

<210> 35
<211> 102
<212> PRT
<213> Homo sapiens

<400> 35
Asp Ile Gln Met Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser Val Gly
1 5 10 15
Asp Arg Val Thr Ile Thr Cys Arg Ala Ser Gln Gly Ile Ser Asn Tyr
20 25 30
Leu Ala Trp Tyr Gln Gln Lys Pro Gly Lys Val Pro Lys Leu Leu Ile
35 40 45
Tyr Ala Ala Ser Thr Leu Gln Ser Gly Val Pro Ser Arg Phe Asn Gly
50 55 60
Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Ser Leu Gln Pro
65 70 75 80
Glu Asp Val Ala Thr Tyr Tyr Cys Gln Lys Tyr Asn Lys Cys Pro Ser
85 90 95
His Phe Arg Gly Arg Asp
100

<210> 36
<211> 306
<212> DNA
<213> Homo sapiens

<400> 36
gacatccaga tgaccaggc tccatcctcc ctgtctgcat ctgtaggaga cagagtccacc 60
atcacttgcc gggcgagtca gggcatttagc aattatttag cctggtatca gcagaaacca 120
gggaaagttc ctaagtcct gatctatgct gcatccactt tgcaatcagg ggtcccatct 180
cggttcaatg gcagtggatc tgggacagat ttcaactctca ccatcagcag cctgcaacct 240
gaagatgttg caacttatta ctgtcaaaaag tataacaagt gcccctctca ctttcggggg 300
agggac 306

<210> 37
<211> 105
<212> PRT
<213> Homo sapiens

<400> 37
Asp Ile Ala Met Thr Gln Ser Pro Asp Ser Leu Ala Val Ser Leu Gly
1 5 10 15
Glu Arg Ala Thr Ile Asn Cys Lys Ser Ser Arg Ser Val Leu Phe Ser
20 25 30
Ser Asn Asn Asn Tyr Leu Ala Trp Tyr Gln Gln Lys Pro Gly Gln
35 40 45
Pro Pro Lys Leu Leu Ile Tyr Trp Ala Ser Thr Arg Glu Ser Gly Val
50 55 60
Pro Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr
65 70 75 80

Ile Ser Ser Leu Gln Ala Glu Asp Val Ala Val Tyr Tyr Cys Gln Gln

85

90

95

Tyr Tyr Ser Thr Pro Ile Thr Phe Gly

100

105

<210> 38

<211> 315

<212> DNA

<213> Homo sapiens

<400> 38

gacatcgca tgaccagtc tccagactcc ctggcagtgt ctctggcga gagggccacc 60
atcaactgca agtccagccg gagtgttta ttcagctcca acaataacaa ctacttagct 120
tggtaccagc agaaaaccagg acagcctcct aagctactca ttactggc atctacccgg 180
gaatccgggg tccctgaccg attcagtgcc agcgggtctg ggacagattt cactctcacc 240
atcagcagcc tgcagcgtga agatgtggca gtttattact gtcagcaata ttatagtact 300
ccaatcacct tcggc 315

<210> 39

<211> 101

<212> PRT

<213> Mus musculus

<400> 39

Asp Ile Val Met Thr Gln Ser His Lys Phe Met Ser Thr Ser Val Gly
1 5 10 15
Asp Arg Val Ser Ile Thr Cys Lys Ala Ser Gln Asp Val Ser Thr Ala
20 25 30
Val Ala Trp Tyr Gln Gln Lys Pro Gly Gln Ser Pro Lys Leu Leu Ile
35 40 45
Tyr Ser Ala Ser Tyr Arg Tyr Thr Gly Val Pro Asp Arg Phe Thr Gly
50 55 60
Ser Gly Ser Gly Thr Asp Phe Thr Phe Thr Ile Ser Ser Val Gln Ala
65 70 75 80
Glu Asp Leu Ala Val Tyr Tyr Cys Gln Gln His Tyr Thr Thr Pro Leu
85 90 95
Thr Phe Gly Ala Gly
100

<210> 40

<211> 303

<212> DNA

<213> Mus musculus

<400> 40

gacatcgtaa tgacgcagtc tcacaaattc atgtccactt cagtaggaga cagggtcagc 60
atcacctgca aggccagtca ggatgtgagt actgctgtag cctggtatca acagaaacca 120
gcacaatctc ctaaactact gattnactcg gcatecctacc ggtacactgg agtccctgat 180
cgcttactg gcagtggatc tgggacggat ttcacttca ccatcagcag tgtgcaggt 240
gaagacctgg cagtttatta ctgtcagcaa cattatacta ctccgctcac gttcggtgct 300
ggg 303

<210> 41

<211> 101

<212> PRT

<213> Mus musculus

<400> 41
Asp Ile Val Met Thr Gln Ser His Lys Phe Met Ser Thr Ser Val Gly
1 5 10 15
Asp Arg Val Ser Ile Thr Cys Lys Ala Ser Gln Asp Val Ser Thr Ala
20 25 30
Val Ala Trp Tyr Gln Gln Lys Pro Gly Gln Ser Pro Lys Leu Leu Ile
35 40 45
Tyr Ser Ala Ser Tyr Arg Tyr Thr Gly Val Pro Asp Arg Phe Thr Gly
50 55 60
Ser Gly Ser Gly Thr Asp Phe Thr Phe Thr Ile Ser Ser Val Gln Ala
65 70 75 80
Glu Asp Leu Ala Val Tyr Tyr Cys Gln Gln His Tyr Thr Thr Pro Leu
85 90 95
Thr Phe Gly Ala Gly
100

<210> 42

<211> 303

<212> DNA

<213> Mus musculus

<400> 42
gacatcgtaa tgacgcagtc tcacaaattc atgtccactt cagtaggaga cagggtcagc 60
atcacctgca aggccagtca ggtatgtgagt actgtctgtag cctggtatca acagaaacca 120
ggacaatctc ctaaactact gatttactcg gcatcctacc ggtacactgg agtcccctgat 180
cgcttcactg gcagtggatc tggacggat ttcactttca ccatcagcag tgtgcaggt 240
gaagacctgg cagtttatta ctgtcagcaa cattatacta ctccgctcac gttcggtgct 300
ggg 303

<210> 43

<211> 108

<212> PRT

<213> Mus musculus

<400> 43
Asp Val Gln Ile Thr Gln Ser Pro Ser Tyr Leu Ala Ala Ser Pro Gly
1 5 10 15
Glu Thr Ile Thr Ile Asn Cys Arg Ala Ser Lys Ser Ile Ser Lys Tyr
20 25 30
Leu Ala Trp Tyr Gln Glu Lys Pro Gly Lys Thr Asn Lys Leu Leu Ile
35 40 45
Tyr Ser Gly Ser Thr Leu Gln Ser Gly Ile Pro Ser Arg Phe Ser Gly
50 55 60
Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Ser Leu Glu Pro
65 70 75 80
Glu Asp Phe Ala Met Tyr Tyr Cys Gln Gln His Asn Glu Tyr Pro Tyr
85 90 95
Thr Phe Gly Gly Thr Lys Leu Glu Ile Lys Arg
100 105

<210> 44

<211> 324

<212> DNA

<213> Mus musculus

<400> 44
gatgtccaga taaccaggc tccatcttat cttgctgcat ctcctggaga aaccattact 60
attaatttgc gggcaagtaa gggcattagc aaatatttag cctggtatca agagaaacct 120
gggaaaacta ataagcttct tatctactct ggatccactt tgcaatctgg aattccatca 180
aggttcagtg gcagtggatc tggtacagat ttcaactctca ccatcagtag cctggagcct 240
gaagattttg caatgttata ctgtcaacag cataatgaat acccgtagac gttcggaggg 300
gggaccaagc tggaaataaa acgg 324

<210> 45
<211> 108
<212> PRT
<213> Mus musculus

<400> 45
Asp Ile Gln Met Thr Gln Ser Pro Ser Ser Leu Ser Ala Ser Leu Gly
1 5 10 15
Glu Arg Val Ser Leu Thr Cys Arg Ala Ser Gln Asp Ile Gly Ser Ser
20 25 30
Leu Asn Trp Leu Gln Gln Glu Pro Asp Gly Thr Ile Lys Arg Leu Ile
35 40 45
Tyr Ala Thr Ser Ser Leu Asp Ser Gly Val Pro Lys Arg Phe Ser Gly
50 55 60
Ser Arg Ser Gly Ser Asp Tyr Ser Leu Thr Ile Ser Ser Leu Glu Ser
65 70 75 80
Glu Asp Phe Val Asp Tyr Tyr Cys Leu Gln Tyr Ala Ser Phe Pro Tyr
85 90 95
Thr Phe Gly Gly Thr Lys Leu Glu Ile Lys Arg
100 105

<210> 46
<211> 324
<212> DNA
<213> Mus musculus

<400> 46
gacatccaga tgacccaggc tccatcctcc ttatctgcct ctctggaga aagagtca 60
ctcacttgc gggcaagtca ggacattggg agtagctta actggcttca gcaggaacca 120
gatggacta ttaaacgcct gatctacgcc acatccagtt tagattctgg tgtccccaaa 180
aggttcagtg gcagtaggtc tgggtcagat tattctctca ccatcagcag ctttgatct 240
gaagattttg tagacttata ctgtctacaa tatgttagtt ttccgtacac gttcggaggg 300
gggaccaagc tggaaataaa acgg 324

<210> 47
<211> 107
<212> PRT
<213> Mus musculus

<400> 47
Gln Ile Val Leu Thr Gln Ser Pro Ala Ile Met Ser Ala Ser Pro Gly
1 5 10 15
Glu Lys Val Thr Ile Ser Cys Ser Ala Ser Ser Ser Val Ser Tyr Met
20 25 30
Tyr Trp Tyr Gln Gln Lys Pro Gly Ser Ser Pro Lys Pro Trp Ile Tyr
35 40 45

Arg Thr Ser Asn Leu Ala Ser Gly Val Pro Ala Arg Phe Ser Gly Ser
50 55 60
Gly Ser Gly Thr Ser Tyr Ser Leu Thr Ile Ser Ser Met Glu Ala Glu
65 70 75 80
Asp Ala Ala Thr Tyr Tyr Cys Gln Gln Tyr His Ser Tyr Pro Leu Thr
85 90 95
Phe Gly Ala Gly Thr Lys Leu Glu Leu Lys Arg
100 105

<210> 48
<211> 321
<212> DNA
<213> Mus musculus

<400> 48
caaattgttc tcacccagtc tccagcaatc atgtctgcat ctccagggga gaagggtcacc 60
atatacctgca gtgccagtc aagtgttaagt tacatgtact ggttaccagca gaagccagga 120
tcctccccca aaccctggat ttatcgacaca tccaacctgg cttctggagt ccctgctcgc 180
ttcagtgccca gttgggtctgg gacctcttac tctctcacaa tcagcagcat ggaggctgaa 240
gatgctgcca ctttattactg ccagcagttt catagttacc cactcacgtt cggtgctggg 300
accaagctgg agctgaaaacg g 321

<210> 49
<211> 124
<212> PRT
<213> Homo sapiens

<400> 49
Glu Val Gln Leu Val Glu Ser Gly Gly Leu Val Gln Pro Gly Gly
1 5 10 15
Ser Leu Arg Leu Ser Cys Ala Ala Ser Gly Phe Thr Phe Ser Ser Tyr
20 25 30
Trp Met Thr Trp Val Arg Gln Ala Pro Gly Lys Gly Leu Glu Met Val
35 40 45
Ala Asn Ile Lys Lys Asp Gly Ser Glu Lys Ser Tyr Val Asp Ser Val
50 55 60
Lys Gly Arg Phe Thr Thr Ser Arg Asp Asn Ala Lys Asn Ser Leu Tyr
65 70 75 80
Leu Gln Met Asn Ser Leu Arg Ala Glu Asp Thr Ala Val Tyr Tyr Cys
85 90 95
Ala Arg Pro Asn Cys Gly Gly Asp Cys Tyr Leu Pro Trp Tyr Phe Asp
100 105 110
Leu Trp Gly Arg Gly Thr Leu Val Thr Val Ser Ser
115 120

<210> 50
<211> 372
<212> DNA
<213> Homo sapiens

<400> 50
gaggtgcagc tgggtggagtc tggggggaggc ttgggtccagc ctggggggtc cctgagactc 60
tcctgtgcag cctctggatt caccttttgtt agctattgga tgacctgggt ccgccaggct 120
ccagggaaagg ggctggagtg ggtggccaac ataaagaaag atgaaagtga gaaatccat 180
gtggactctg tgaaggccc attcaccacc tccagagaca acgccaagaa ctcactgtat 240

ctgcaaatga acagcctgag agccgaggac acggctgtgt attactgtgc gagacccaat 300
tgtgggttg actgctattt accatggta ttcgatctct gggccgtgg caccctggtc 360
actgtctcct ca 372

<210> 51
<211> 122
<212> PRT
<213> Homo sapiens

<400> 51
Asp Ile Val Met Thr Gln Ser Pro Asp Ser Leu Ala Val Ser Leu Gly
1 5 10 15
Glu Arg Ala Thr Ile Asn Cys Lys Ser Ser Gln Ser Val Leu Tyr Ser
20 25 30
Ser Asn Asn Lys Asn Tyr Leu Ala Trp Tyr Gln Gln Lys Pro Gly Gln
35 40 45
Pro Pro Lys Leu Leu Ile Tyr Trp Ala Ser Thr Arg Glu Ser Gly Val
50 55 60
Pro Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr
65 70 75 80
Ile Ser Ser Leu Gln Ala Glu Asp Val Ala Val Tyr Tyr Cys Gln Gln
85 90 95
Tyr Tyr Asn Thr Pro Gln Ala Phe Gly Gln Gly Thr Lys Val Glu Ile
100 105 110
Lys Arg Thr Val Ala Ala Pro Ser Val Phe
115 120

<210> 52
<211> 366
<212> DNA
<213> Homo sapiens

<400> 52
gacatcgta tgaccaggc tccagactcc ctggctgtgt ctctggcga gagggccacc 60
atcaactgca agtccagcca gagtgttta tacagctcca acaataagaa ctacttagct 120
tggtaccagg agaaaccagg acagcctcct aaactactca ttactggc atctacccgg 180
gaatccgggg tccctgaccg attcagtggc agcgggtctg ggacagattt cactctcacc 240
atcagcagcc tgcaggctga agatgtggca gtttattact gtcagcaata ttataatact 300
cctcaggcgt tcggccaagg gaccaagggtg gaaatcaaac gaactgtggc tgcaccatct 360
gtcttc 366

<210> 53
<211> 78
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 53
actcccaagt cggctcgctt totcttcagt gacaaacaca gacatagaac attcaccatg 60
ggatggagct gtatcact 78

<210> 54
<211> 47
<212> DNA

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<213> Artificial Sequence

<220>
<223> primer

<400> 54
actgactctc ttaattaaga ctcacctgag gagactgtga gagtggt      47

<210> 55
<211> 48
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 55
ttggcgccaa agactcag cctggacatg atgtcctctg ctcagttc      48

<210> 56
<211> 43
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 56
atagtttagc ggccgcattc ttatctaaca ctctccctg ttg      43

<210> 57
<211> 155
<212> DNA
<213> Artificial Sequence

<220>
<223> synthetic

<400> 57
gactcggtcc gcccagccac tggaaagtgcg cggtgttcc attcggtgat catcaactgaa 60
cacagaggac tcaccatgga gtttgggctg agctgggttt tcctcggtgc tcttttaaga 120
ggtgtccagt gtcaggtgca gctgggtggag tctgg      155

<210> 58
<211> 56
<212> DNA
<213> Artificial Sequence

<220>
<223> synthetic

<400> 58
ccttaattaa gacctggaga ggccattctt acctgaggag acgggtgacca gggttc      56

<210> 59
<211> 36
<212> DNA

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<213> Artificial Sequence

<220>
<223> synthetic

<400> 59
ctagctagcg tccttaggtca gcccaaggct gcccc          36

<210> 60
<211> 36
<212> DNA
<213> Artificial Sequence

<220>
<223> synthetic

<400> 60
atagtttagc ggccgcacct atgaacattc tgtagg          36

<210> 61
<211> 111
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 61
ctagctagcc cgaatttcgg gacaatcttc atcatgacct gctcccctct ctcctcacc 60
cttctcattc actgcacagg gtcctgggcc cagtctgtgt tgacgcagcc g           111

<210> 62
<211> 32
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 62
gggcagcctt gggctgagct aggacggtca gc          32

<210> 63
<211> 393
<212> DNA
<213> Mus musculus

<400> 63
atgatgtcct ctgctcagtt cttgggtctc ctgttgctct gtttcaagg taccagatgt 60
gatatccaga tgacacagac tacatcctcc ctgtctgcct ctctgggaga cagagtccacc 120
atcagttgca gggcaagtca ggacatttgc aattattaa actggatatac gcagaaacca 180
gatggaaactg tttaactcct gatctactac acatcaagat tacactcagg agtcccatca 240
agggtcagtg gcagtggttc tggAACAGAT tattctctca ccatttagcaa cctggagcaa 300
gaagatattg ccacttactt ttgccaacag ggtaatacgc ttccgtggac gttcgggtgga 360
ggcaccaagc tggAAATCAA acgggctgat gct           393

<210> 64

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<211> 131
<212> PRT
<213> Mus musculus

<400> 64

Met Met Ser Ser Ala Gln Phe Leu Gly Leu Leu Leu Cys Phe Gln
1 5 10 15
Gly Thr Arg Cys Asp Ile Gln Met Thr Gln Thr Thr Ser Ser Leu Ser
20 25 30
Ala Ser Leu Gly Asp Arg Val Thr Ile Ser Cys Arg Ala Ser Gln Asp
35 40 45
Ile Ser Asn Tyr Leu Asn Trp Tyr Gln Gln Lys Pro Asp Gly Thr Val
50 55 60
Lys Leu Leu Ile Tyr Tyr Thr Ser Arg Leu His Ser Gly Val Pro Ser
65 70 75 80
Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Tyr Ser Leu Thr Ile Ser
85 90 95
Asn Leu Glu Gln Glu Asp Ile Ala Thr Tyr Phe Cys Gln Gln Gly Asn
100 105 110
Thr Leu Pro Trp Thr Phe Gly Gly Thr Lys Leu Glu Ile Lys Arg
115 120 125
Ala Asp Ala
130

<210> 65
<211> 429
<212> DNA
<213> Mus musculus

<400> 65

atgggatgga gctgtatcat ccttttttgc gtagcagcag ctacagggtgt ccactcccaag 60
gtccaactgc agcagcctgg gactgaactg gtgaaggctg gggcttcagt gaagctgtcc 120
tgcaaggctt ctggctacac cttcaccagc tactggatgc actgggtgaa gcagaggcct 180
ggacaaggcc tttagtggat tgaaaatatt aatcctagca atgggtggta taactacaat 240
gagaagttca agagcaaggc cacactgact gtagacaat cctccagcac agcctacatg 300
cagctcagca gcctgacatc tgaggactct gcggtctatt atttgcaag acggggccct 360
tactacggta gtaggaactt tgactactgg ggccaaggca ccactctcac agtctcctca 420
gagagtca 429

<210> 66
<211> 143
<212> PRT
<213> Mus musculus

<400> 66

Met Gly Trp Ser Cys Ile Ile Leu Phe Leu Val Ala Ala Ala Thr Gly
1 5 10 15
Val His Ser Gln Val Gln Leu Gln Gln Pro Gly Thr Glu Leu Val Lys
20 25 30
Pro Gly Ala Ser Val Lys Leu Ser Cys Lys Ala Ser Gly Tyr Thr Phe
35 40 45
Thr Ser Tyr Trp Met His Trp Val Lys Gln Arg Pro Gly Gln Gly Leu
50 55 60
Glu Trp Ile Gly Asn Ile Asn Pro Ser Asn Gly Gly Thr Asn Tyr Asn
65 70 75 80
Glu Lys Phe Lys Ser Lys Ala Thr Leu Thr Val Asp Lys Ser Ser Ser

	85	90	95
Thr Ala Tyr Met Gln Leu Ser Ser Leu Thr Ser Glu Asp Ser Ala Val			
100	105	110	
Tyr Tyr Cys Ala Arg Arg Ala Pro Tyr Tyr Gly Ser Arg Asn Phe Asp			
115	120	125	
Tyr Trp Gly Gln Gly Thr Thr Leu Thr Val Ser Ser Glu Ser Gln			
130	135	140	

<210> 67
<211> 138
<212> PRT
<213> Mus musculus

<400> 67			
Met Gly Trp Arg Trp Ile Phe Leu Phe Leu Leu Ser Gly Thr Ala Gly			
1	5	10	15
Val His Cys Gln Val Gln Leu Gln Gln Ser Gly Pro Glu Leu Val Lys			
20	25	30	
Pro Gly Ala Leu Val Lys Ile Ser Cys Lys Ala Ser Gly Tyr Thr Phe			
35	40	45	
Thr Ser Tyr Asp Ile Asn Trp Val Lys Gln Arg Pro Gly Gln Gly Leu			
50	55	60	
Glu Trp Ile Gly Trp Ile Tyr Pro Gly Asp Gly Ser Thr Lys Tyr Asn			
65	70	75	80
Glu Lys Phe Lys Gly Lys Ala Thr Leu Thr Ala Asp Lys Ser Ser Ser			
85	90	95	
Thr Ala Tyr Met Gln Leu Ser Ser Leu Thr Ser Glu Asn Ser Ala Val			
100	105	110	
Tyr Phe Cys Ala Arg Gly Ala Arg Phe Tyr Trp Tyr Phe Asp Val Trp			
115	120	125	
Gly Ala Gly Thr Thr Val Thr Val Ser Ser			
130	135		

<210> 68
<211> 135
<212> PRT
<213> Mus musculus

<400> 68			
Met Ala Val Leu Gly Leu Leu Phe Cys Leu Val Thr Phe Pro Ser Cys			
1	5	10	15
Val Leu Ser Gln Val Gln Leu Lys Gln Ser Gly Pro Gly Leu Val Gln			
20	25	30	
Pro Ser Gln Ser Leu Ser Ile Thr Cys Thr Val Ser Gly Phe Ser Leu			
35	40	45	
Thr Ser Tyr Gly Val His Trp Val Arg Gln Ser Pro Gly Lys Gly Leu			
50	55	60	
Glu Trp Leu Gly Val Ile Trp Ser Gly Gly Ser Thr Asp Tyr Asn Ala			
65	70	75	80
Ala Phe Ile Ser Arg Leu Ser Ile Ser Lys Asp Asn Ser Lys Ser Gln			
85	90	95	
Val Phe Phe Lys Met Asn Ser Leu Gln Ser Asn Asp Thr Ala Ile Tyr			
100	105	110	
Tyr Cys Ala Arg Asp Cys Gly Ser Arg Gly Asp Tyr Trp Gly Gln Gly			
115	120	125	

Thr Ser Val Thr Val Ser Ser
130 135

<210> 69
<211> 143
<212> PRT
<213> Mus musculus

<400> 69
Met Lys Leu Trp Leu Asn Trp Val Phe Leu Leu Thr Leu Leu His Gly
1 5 10 15
Ile Gln Cys Glu Val Lys Leu Val Glu Ser Gly Gly Gly Leu Val Gln
20 25 30
Pro Gly Gly Ser Leu Arg Leu Ser Cys Ala Thr Ser Gly Phe Thr Phe
35 40 45
Ser Asp Phe Tyr Met Glu Trp Val Arg Gln Pro Pro Gly Lys Arg Leu
50 55 60
Glu Trp Ile Ala Ala Ser Arg Asn Lys Ala Asn Asp Tyr Thr Thr Glu
65 70 75 80
Tyr Ser Ala Ser Val Lys Gly Arg Phe Ile Val Ser Arg Asp Thr Ser
85 90 95
Gln Ser Ile Leu Tyr Leu Gln Met Asn Ala Leu Arg Ala Glu Asp Thr
100 105 110
Ala Ile Tyr Tyr Cys Ala Arg Asp Ala Arg Gln Leu Gly Leu Pro Ala
115 120 125
Trp Phe Ala Tyr Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ala
130 135 140

<210> 70
<211> 128
<212> PRT
<213> Mus musculus

<400> 70
Met Glu Ser Gln Thr Leu Val Phe Ile Ser Ile Leu Leu Trp Leu Tyr
1 5 10 15
Gly Ala Asp Gly Asn Ile Val Met Thr Gln Ser Pro Lys Ser Met Ser
20 25 30
Met Ser Val Gly Glu Arg Val Thr Leu Thr Cys Lys Ala Ser Glu Asn
35 40 45
Val Val Thr Tyr Val Ser Trp Tyr Gln Gln Lys Pro Glu Gln Ser Pro
50 55 60
Lys Leu Leu Ile Tyr Gly Ala Ser Asn Arg Tyr Thr Gly Val Pro Asp
65 70 75 80
Arg Phe Thr Gly Ser Gly Ser Ala Thr Asp Phe Thr Leu Thr Ile Ser
85 90 95
Ser Val Gln Ala Glu Asp Leu Ala Asp Tyr His Cys Gly Gln Gly Tyr
100 105 110
Ser Tyr Pro Tyr Thr Phe Gly Gly Thr Lys Leu Glu Ile Lys Arg
115 120 125

<210> 71
<211> 130
<212> PRT

<213> Mus musculus

<400> 71

Met Asp Met Arg Ala Pro Ala Gln Ile Phe Gly Phe Leu Leu Leu
1 5 10 15
Phe Gln Gly Thr Arg Cys Asp Ile Gln Met Thr Gln Ser Pro Ser Ser
20 25 30
Leu Ser Ala Ser Leu Gly Glu Arg Val Ser Leu Thr Cys Arg Ala Ser
35 40 45
Gln Asp Ile Gly Ser Ser Leu Asn Trp Leu Gln Gln Glu Pro Asp Gly
50 55 60
Thr Ile Lys Arg Leu Ile Tyr Ala Thr Ser Ser Leu Asp Ser Gly Val
65 70 75 80
Pro Lys Arg Phe Ser Gly Ser Arg Ser Gly Ser Asp Tyr Ser Leu Thr
85 90 95
Ile Ser Ser Leu Glu Ser Glu Asp Phe Val Asp Tyr Tyr Cys Leu Gln
100 105 110
Tyr Ala Ser Ser Pro Tyr Thr Phe Gly Gly Thr Lys Leu Glu Ile
115 120 125
Lys Arg
130

<210> 72

<211> 128

<212> PRT

<213> Mus musculus

<400> 72

Met Glu Ser Gln Ile Gln Val Phe Val Phe Val Phe Leu Trp Leu Ser
1 5 10 15
Gly Val Asp Gly Asp Ile Val Met Thr Gln Ser His Lys Phe Met Ser
20 25 30
Thr Ser Val Gly Asp Arg Val Ser Ile Thr Cys Lys Ala Ser Gln Asp
35 40 45
Val Ser Thr Ala Val Ala Trp Tyr Gln Gln Lys Pro Gly Gln Ser Pro
50 55 60
Lys Leu Leu Ile Tyr Ser Ala Ser Tyr Arg Tyr Thr Gly Val Pro Asp
65 70 75 80
Arg Phe Thr Gly Ser Gly Ser Gly Thr Asp Phe Thr Phe Thr Ile Ser
85 90 95
Ser Val Gln Ala Glu Asp Leu Ala Val Tyr Tyr Cys Gln Gln His Tyr
100 105 110
Thr Thr Pro Leu Thr Phe Gly Ala Gly Thr Lys Leu Glu Leu Lys Arg
115 120 125

<210> 73

<211> 21

<212> DNA

<213> Artificial Sequence

<220>

<223> synthetic

<400> 73

actcccaagt cggtcgcctt t

<210> 74
<211> 270
<212> DNA
<213> Artificial Sequence

<220>
<223> template

<400> 74
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cagctgggtgg agtctggggg aggcttggtc cagcctgggg ggtccctgag actctcctgt 180
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<212> DNA
<213> Artificial Sequence

<220>
<223> template

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agcctgagag ccgaggacac ggctgtgtat tactgtgcga gacccaaattt tggtggtgac 180
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<210> 76
<211> 18
<212> DNA
<213> Artificial Sequence

<220>
<223> primer

<400> 76
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<210> 77
<211> 105
<212> DNA
<213> Artificial Sequence

<220>
<223> 5' primer with leader sequence

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ttgctctggta tctctgggc ctacggggac atcgtatgaa cccag 105

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<211> 20
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<213> Artificial Sequence

<220>

<223> 3' primer

<400> 78
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<210> 79

<211> 39

<212> DNA

<213> Artificial Sequence

<220>

<223> 5' primer

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<213> Artificial Sequence

<220>

<223> 3' primer

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